



**US Army Corps
of Engineers®
Memphis District**

SECTION VIII

Northwest Tennessee Regional Harbor

PALLID STURGEON SAMPLE

April 2004

Species composition and habitat characteristics of Cates Landing, Lake County, TN

Cates Landing is a seasonal backwater that follows the Slough Landing Neck Revetment on an outside bend of the Mississippi River (mile 900) in Lake County, Tennessee. At the request of MVM, ERDC-EL sampled fishes on 13-14 May 2003 with trotlines and gillnets and characterized habitat in both the backwater and adjacent river. Seven, 60-hook trotlines and 4, 90-foot gillnets were set inside the backwater overnight. A comparable trotline effort was made in the river the following day. Submersed willows in the backwater indicated that much of the area remains dry during low-water months, but during the sampling period the mean depth was 27.4 feet (Table 1). Water velocities in the backwater ranged from 2 to 39 cm/s with a mean value of 15.1 cm/s. Substrates were comprised mainly of mud with clays occurring toward the end of the backwater and sand mixing at the mouth where currents were stronger. In the river, trotlines were set over flooded banks with sand/mud substrates in deeper, faster water (mean depth 38.6 feet, mean velocity 68.4 cm/s). Water temperature, conductivity and pH were comparable for both sampling areas, but dissolved oxygen and turbidity were lower in the backwater due to the slower currents (Table 1).

Species composition in the river was characteristic of the benthic fish assemblage (Table 2). Four species of catfish were collected in the river along with freshwater drum (*Aplodinotus grunniens*) and shovelnose sturgeon (*Scaphirhynchus platyrhynchus*). Shovelnose sturgeon was the most abundant species of those collected, averaging 5.2 per line. Blue catfish (*Ictalurus furcatus*) is usually the dominant benthic fish collected with trotlines, but spring spawning movements of shovelnose sturgeon may have contributed to their higher abundance during this particular sampling period. One of the catfishes collected, the stonecat (*Noturus flavus*), is rarely collected but appears to be an inhabitant of swift water in the Mississippi. A pallid sturgeon (*Scaphirhynchus albus*) was collected on a trotline the following day over a flooded sandbar at Kentucky Point near New Madrid, MO (RM 885).

Species composition in the backwater was similar to the river with two exceptions. Stonecats were not collected, but prefer swiftwater. Only three shovelnose sturgeon were collected at the mouth of the backwater where currents were strongest and substrates were sandier. Blue catfish (*Ictalurus furcatus*) comprised over 71% of individuals collected, and flathead catfish (*Pylodictis olivaris*) and freshwater drum comprised 15.3% and 5.1% of the total, respectively. Channel catfish were not collected in the backwater, but are generally ubiquitous throughout most habitats. It should be noted that a few of the trotlines set near the end of the backwater were laid over submersed willows and unable to reach the bottom. In addition, gillnets captured only one specimen, a blue catfish. Small sample size and flooded conditions will hamper comprehensive assessment of overall species composition, but techniques used are effective in determining presence/absence of sturgeon.

Cates Landing backwater does not conform to the characteristic swiftwater, channel habitats occupied by juvenile and adult pallid sturgeon. However, high abundances of larval fish comprised of multiple species were observed in the backwater, particularly in vegetated areas where cover was readily available. A more tailored study targeting early life history stages

would be required to characterize spawning and rearing value of the backwater to Mississippi River fishes.

Table 1. Water quality parameters in Cates Landing backwater and Mississippi River Mile 900 on 13 and 14 May 2003, respectively. (CEWES)		
	<i>Cates Landing</i>	<i>Mississippi River</i>
Mean water depth <i>feet</i>	27.4	38.6
Mean water velocity <i>cm/s</i>	15.1	68.4
Temperature <i>°C</i>	20.42	20.42
Conductivity $\mu\text{S/cm}$	277	280
pH	7.04	7.01
Dissolved oxygen <i>mg/L</i>	8.05	8.63
Turbidity <i>NTUs</i>	43	71

Table 2. Numbers of individuals collected by species in Cates Landing backwater and Mississippi River Mile 900 on 13 and 14 May 2003, respectively. (CEWES)				
Scientific Name	Common name	<i>Cates Landing</i>	<i>Mississippi River</i>	Total
Family Acipenseridae				
<i>Scaphirhynchus platyrhynchus</i>	Shovelnose sturgeon	3	37	40
Family Ictaluridae				
<i>Ictalurus furcatus</i>	Blue catfish	29	13	52
<i>I. punctatus</i>	Channel catfish		1	1
<i>Noturus flavus</i>	Stonecat		1	1
<i>Pylodictis olivaris</i>	Flathead catfish	6	6	12
Family Sciaenidae				
<i>Aplodinotus grunniens</i>	Freshwater drum	2	2	4
Sample number (N)		11	7	18
Total number of species		4	6	6
Total number of individuals		40	60	100